OIPE JC14
FEB 07 2005
PATENT & TRADEMARK OFFICE

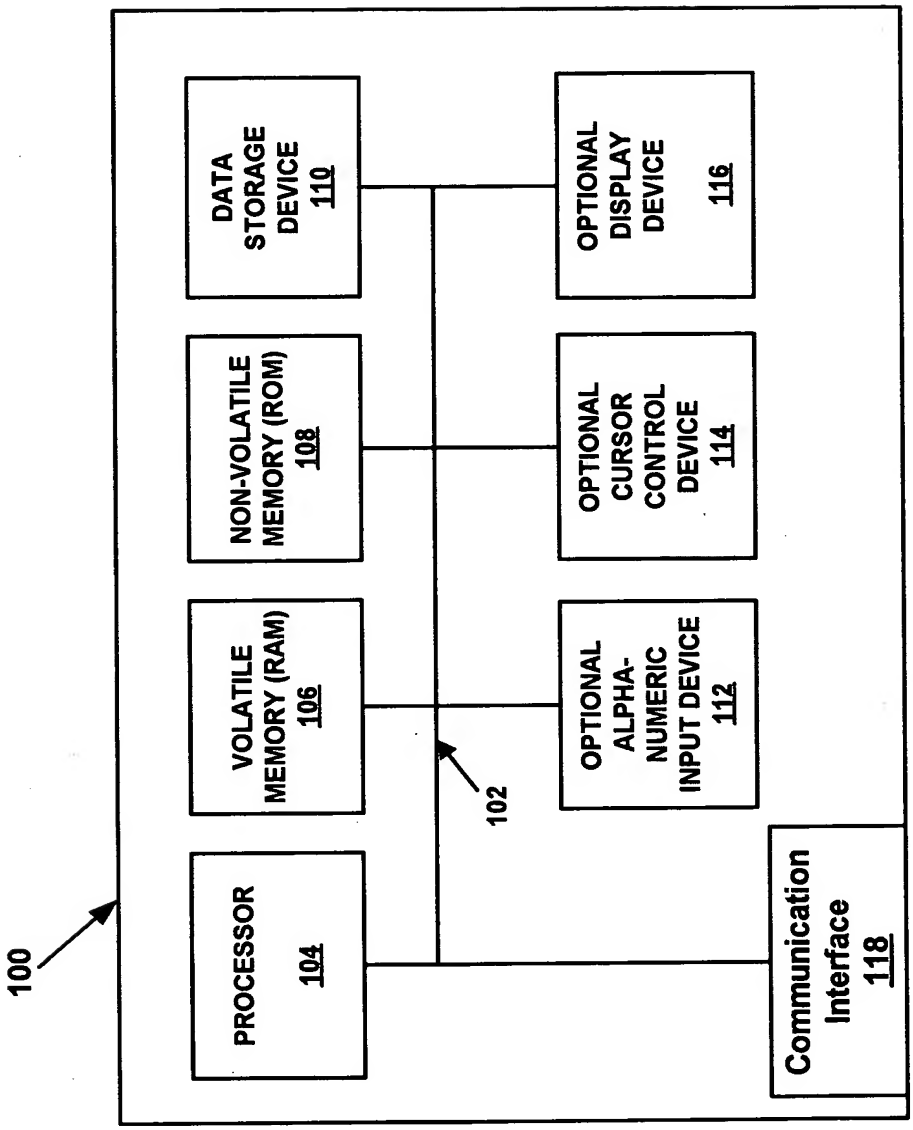

FIG.1

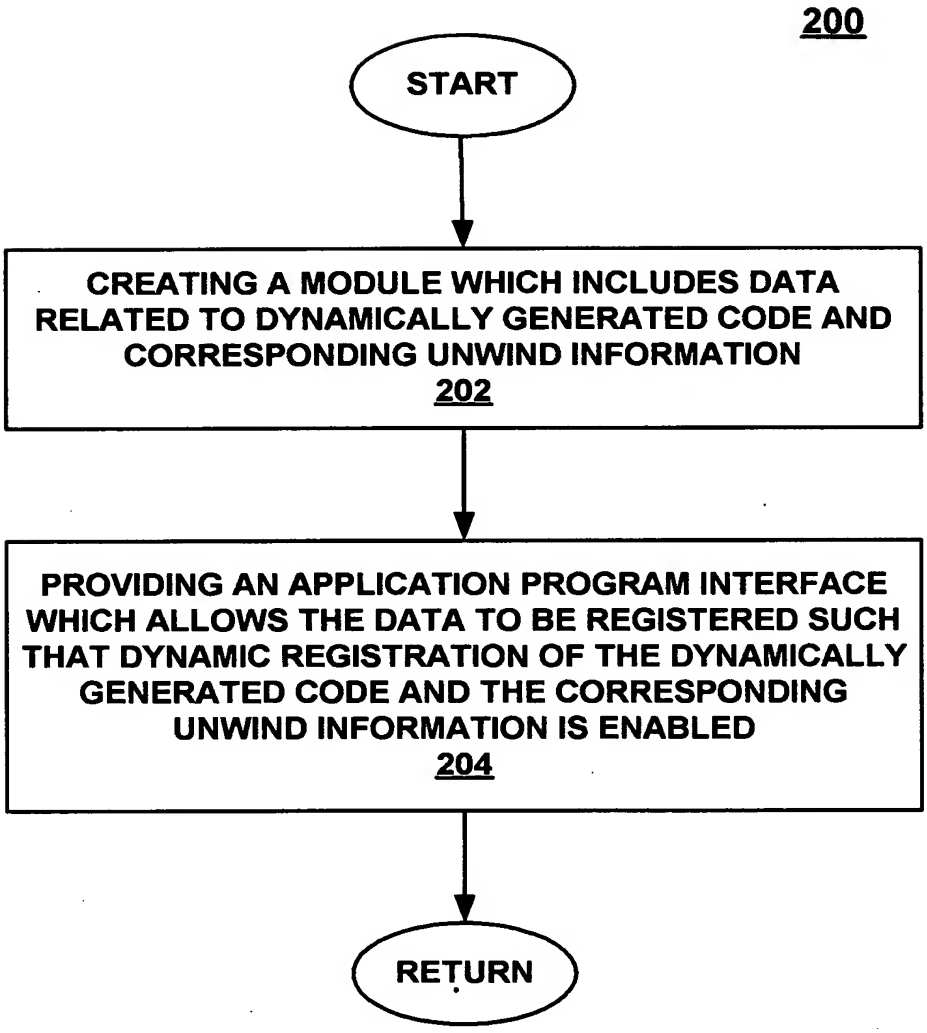
200
START
CREATING A MODULE WHICH INCLUDES DATA RELATED TO DYNAMICALLY GENERATED CODE AND CORRESPONDING UNWIND INFORMATION
202
PROVIDING AN APPLICATION PROGRAM INTERFACE WHICH ALLOWS THE DATA TO BE REGISTERED SUCH THAT DYNAMIC REGISTRATION OF THE DYNAMICALLY GENERATED CODE AND THE CORRESPONDING UNWIND INFORMATION IS ENABLED
204
RETURN

FIG. 2

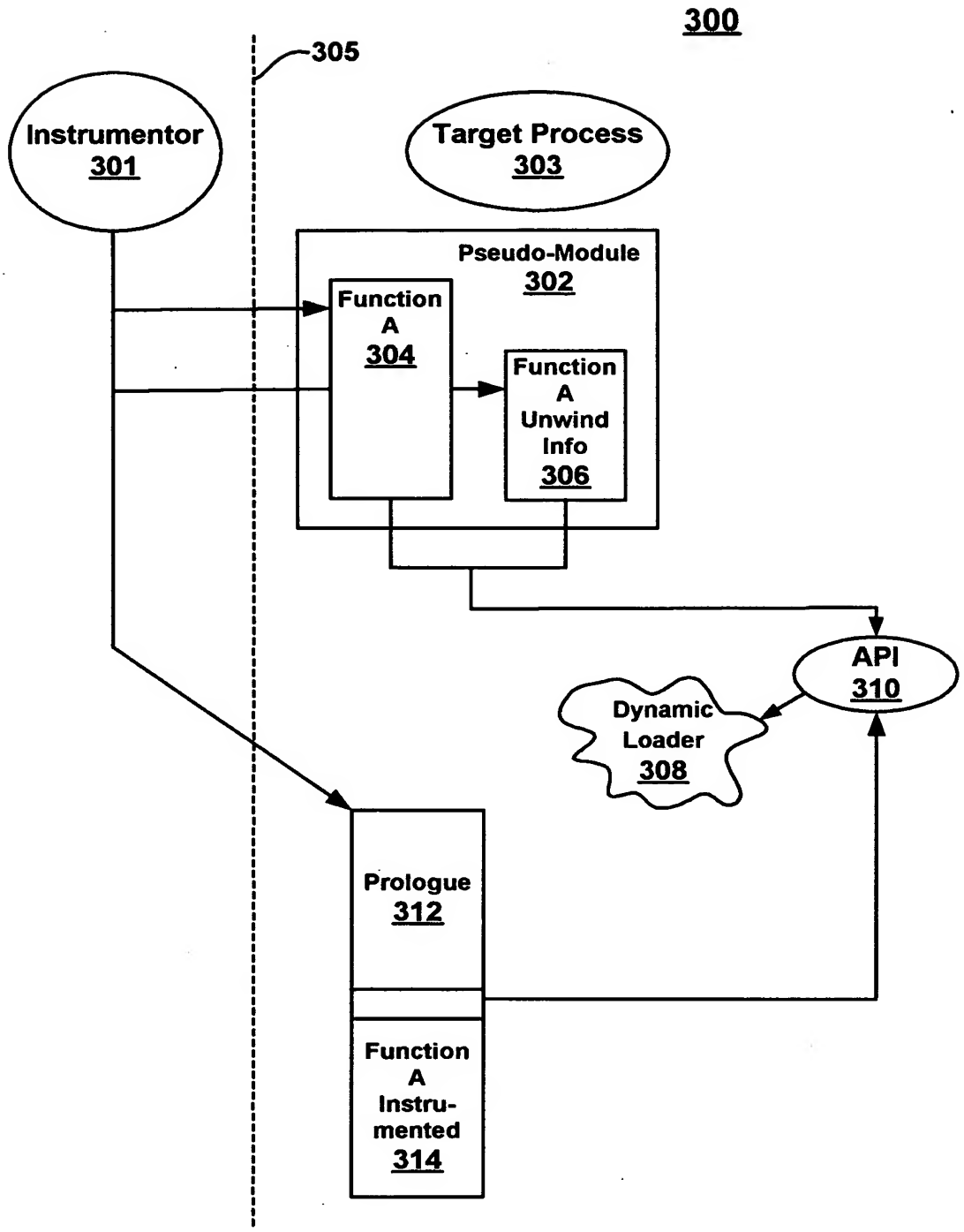
300
305
Instrumentor
301
Target Process
303
Pseudo-Module
302
Function
A
304
Function
A
Unwind
Info
306
API
310
Dynamic
Loader
308
Prologue
312
Function
A
Instru-
mented
314

FIG. 3

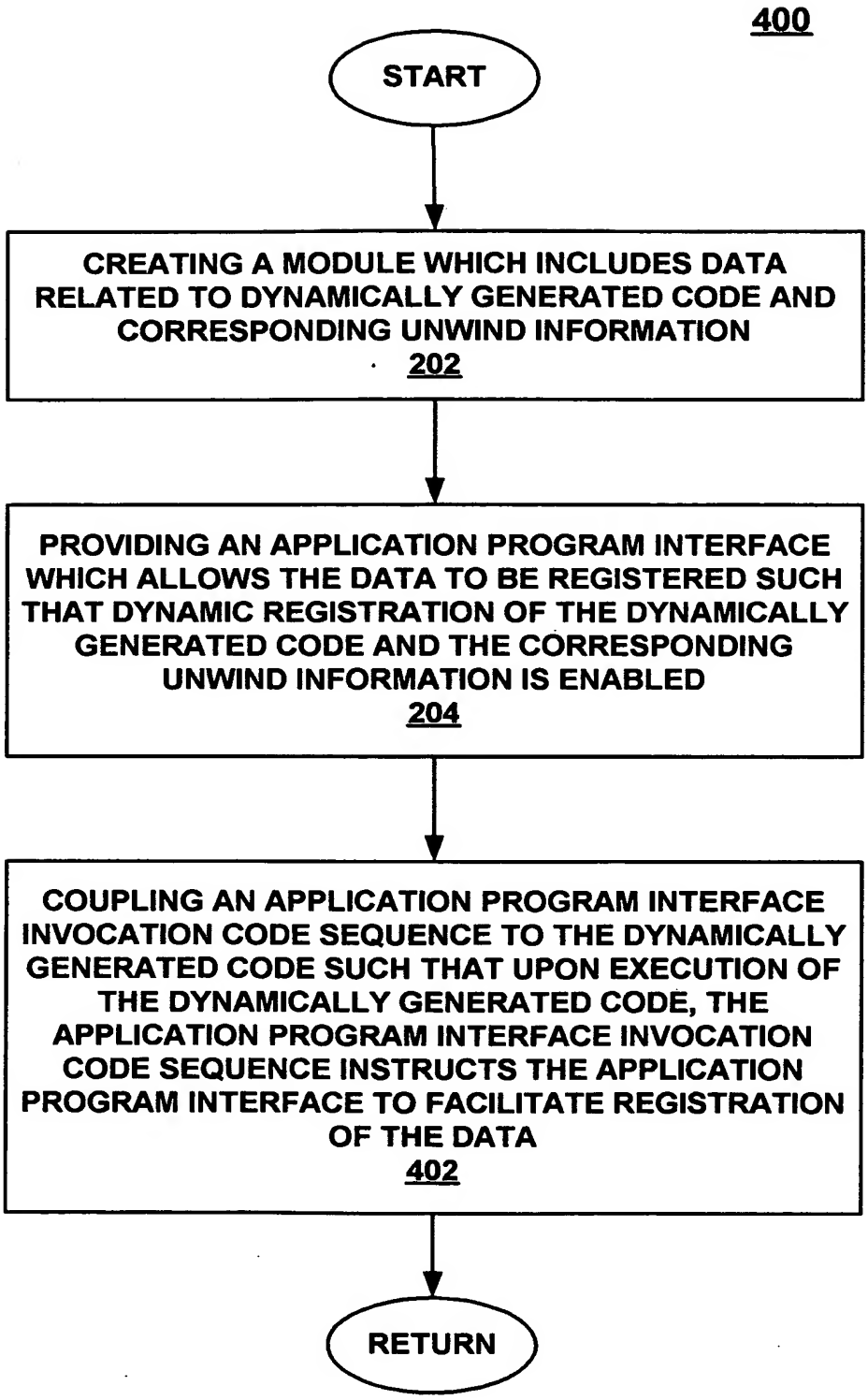
400
START
CREATING A MODULE WHICH INCLUDES DATA RELATED TO DYNAMICALLY GENERATED CODE AND CORRESPONDING UNWIND INFORMATION
202
PROVIDING AN APPLICATION PROGRAM INTERFACE WHICH ALLOWS THE DATA TO BE REGISTERED SUCH THAT DYNAMIC REGISTRATION OF THE DYNAMICALLY GENERATED CODE AND THE CORRESPONDING UNWIND INFORMATION IS ENABLED
204
COUPLING AN APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE TO THE DYNAMICALLY GENERATED CODE SUCH THAT UPON EXECUTION OF THE DYNAMICALLY GENERATED CODE, THE APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE INSTRUCTS THE APPLICATION PROGRAM INTERFACE TO FACILITATE REGISTRATION OF THE DATA
402
RETURN

FIG. 4

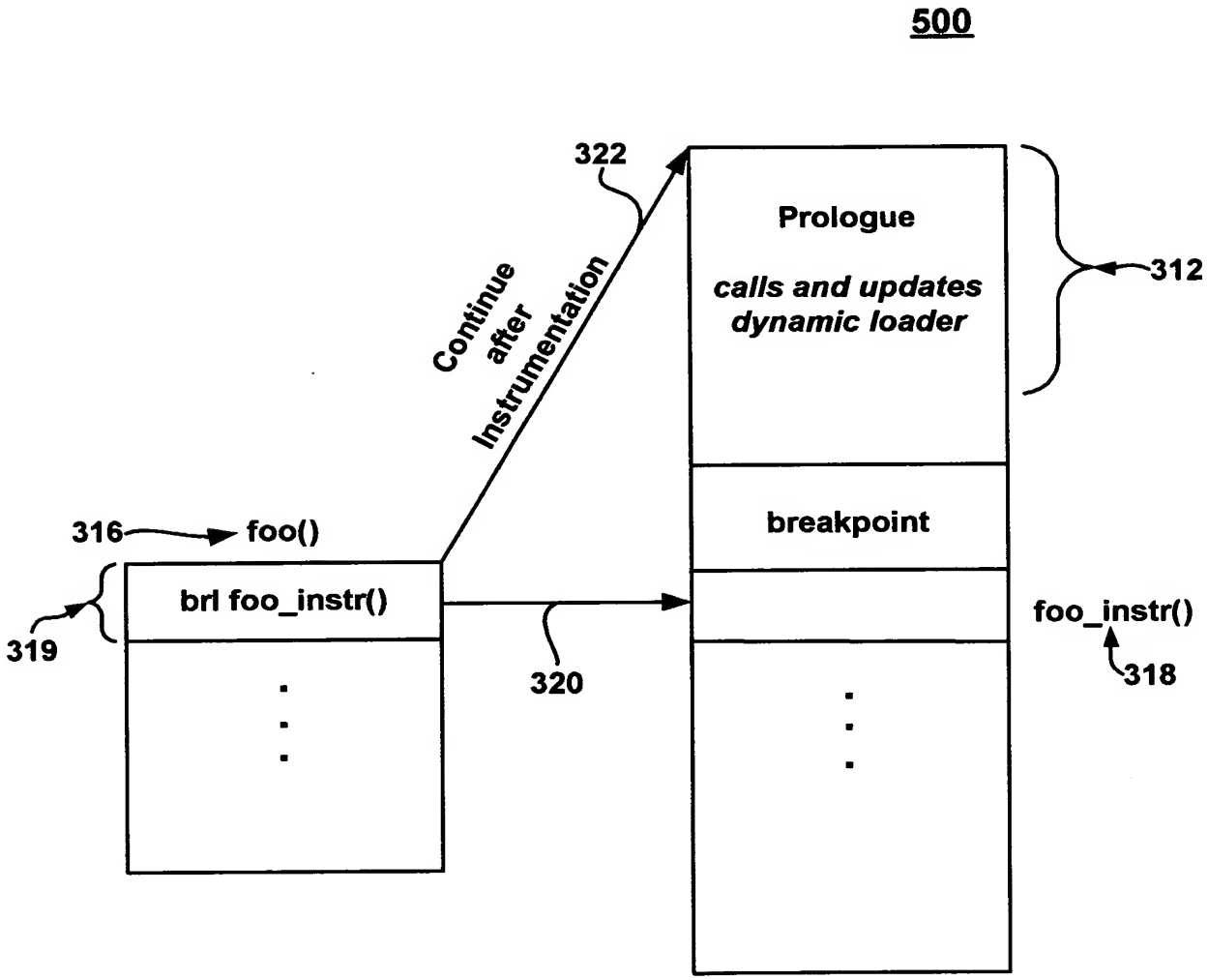
500
322
Continue after Instrumentation
Prologue
calls and updates dynamic loader
312
breakpoint
316
foo()
brl foo_instr()
319
320
foo_instr()
318

FIG. 5

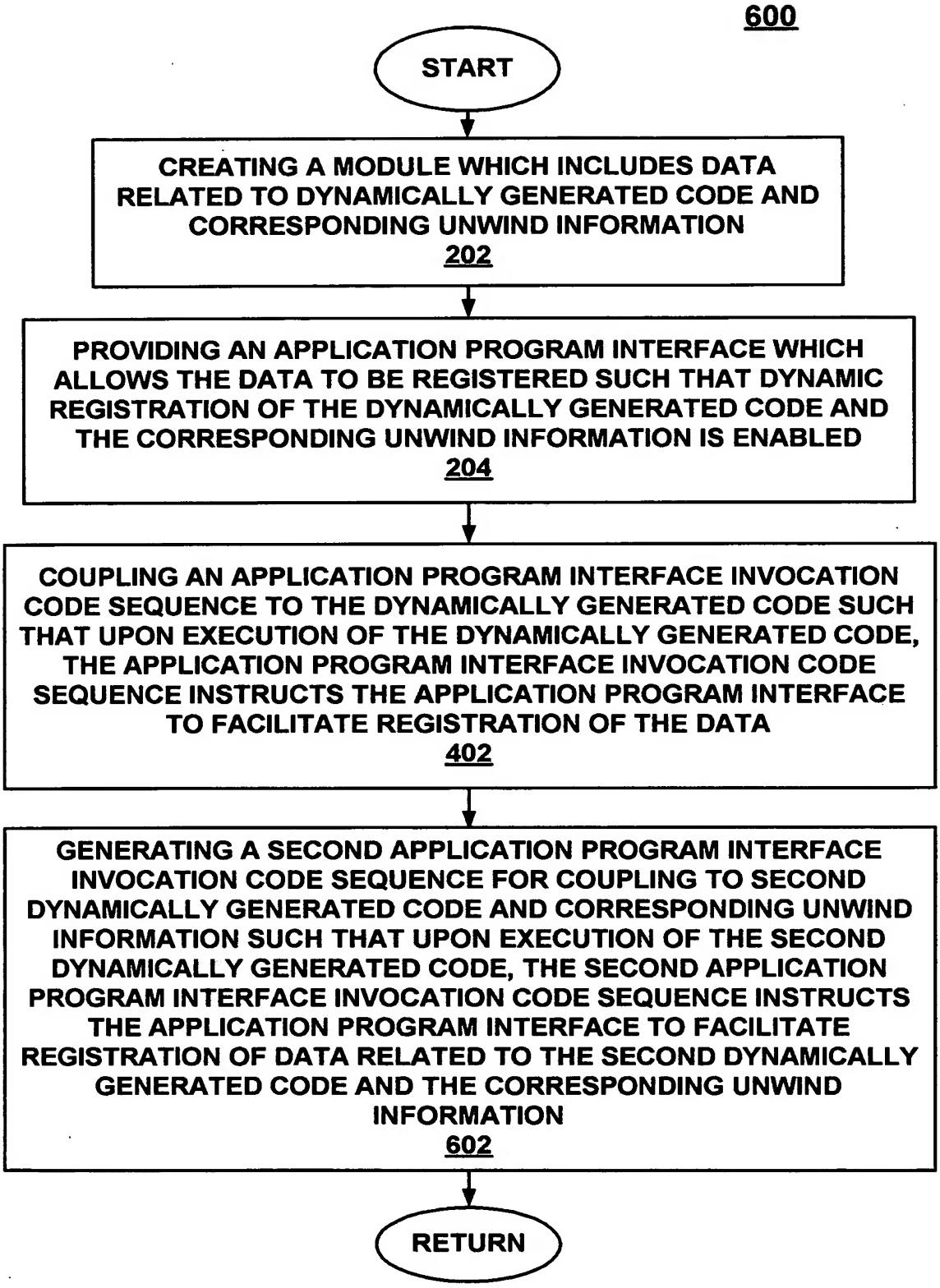
600
START
CREATING A MODULE WHICH INCLUDES DATA RELATED TO DYNAMICALLY GENERATED CODE AND CORRESPONDING UNWIND INFORMATION
202
PROVIDING AN APPLICATION PROGRAM INTERFACE WHICH ALLOWS THE DATA TO BE REGISTERED SUCH THAT DYNAMIC REGISTRATION OF THE DYNAMICALLY GENERATED CODE AND THE CORRESPONDING UNWIND INFORMATION IS ENABLED
204
COUPLING AN APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE TO THE DYNAMICALLY GENERATED CODE SUCH THAT UPON EXECUTION OF THE DYNAMICALLY GENERATED CODE, THE APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE INSTRUCTS THE APPLICATION PROGRAM INTERFACE TO FACILITATE REGISTRATION OF THE DATA
402
GENERATING A SECOND APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE FOR COUPLING TO SECOND DYNAMICALLY GENERATED CODE AND CORRESPONDING UNWIND INFORMATION SUCH THAT UPON EXECUTION OF THE SECOND DYNAMICALLY GENERATED CODE, THE SECOND APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE INSTRUCTS THE APPLICATION PROGRAM INTERFACE TO FACILITATE REGISTRATION OF DATA RELATED TO THE SECOND DYNAMICALLY GENERATED CODE AND THE CORRESPONDING UNWIND INFORMATION
602
RETURN

FIG. 6

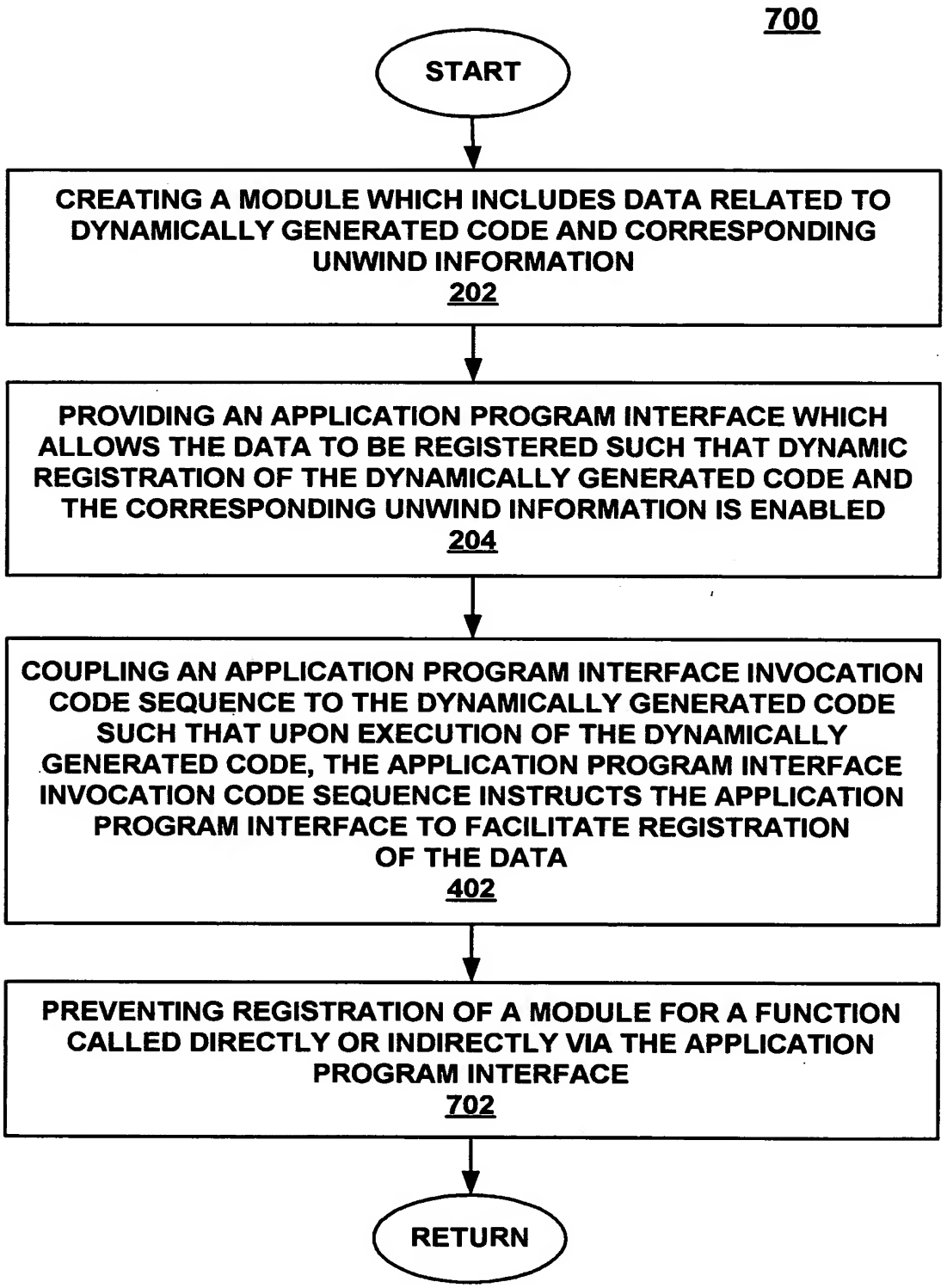
700
START
CREATING A MODULE WHICH INCLUDES DATA RELATED TO DYNAMICALLY GENERATED CODE AND CORRESPONDING UNWIND INFORMATION
202
PROVIDING AN APPLICATION PROGRAM INTERFACE WHICH ALLOWS THE DATA TO BE REGISTERED SUCH THAT DYNAMIC REGISTRATION OF THE DYNAMICALLY GENERATED CODE AND THE CORRESPONDING UNWIND INFORMATION IS ENABLED
204
COUPLING AN APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE TO THE DYNAMICALLY GENERATED CODE SUCH THAT UPON EXECUTION OF THE DYNAMICALLY GENERATED CODE, THE APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE INSTRUCTS THE APPLICATION PROGRAM INTERFACE TO FACILITATE REGISTRATION OF THE DATA
402
PREVENTING REGISTRATION OF A MODULE FOR A FUNCTION CALLED DIRECTLY OR INDIRECTLY VIA THE APPLICATION PROGRAM INTERFACE
702
RETURN

FIG. 7

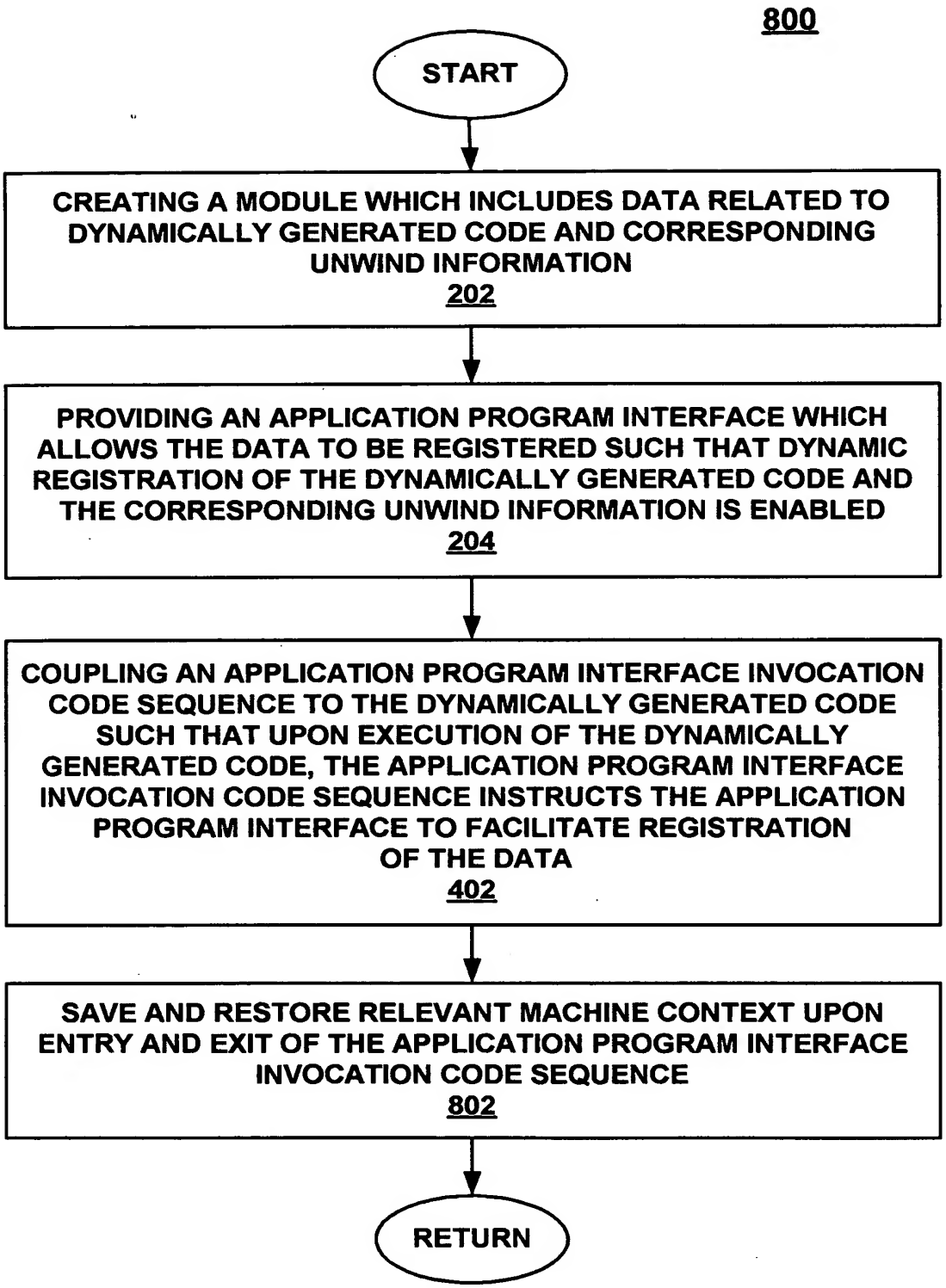
800
START
CREATING A MODULE WHICH INCLUDES DATA RELATED TO DYNAMICALLY GENERATED CODE AND CORRESPONDING UNWIND INFORMATION
202
PROVIDING AN APPLICATION PROGRAM INTERFACE WHICH ALLOWS THE DATA TO BE REGISTERED SUCH THAT DYNAMIC REGISTRATION OF THE DYNAMICALLY GENERATED CODE AND THE CORRESPONDING UNWIND INFORMATION IS ENABLED
204
COUPLING AN APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE TO THE DYNAMICALLY GENERATED CODE SUCH THAT UPON EXECUTION OF THE DYNAMICALLY GENERATED CODE, THE APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE INSTRUCTS THE APPLICATION PROGRAM INTERFACE TO FACILITATE REGISTRATION OF THE DATA
402
SAVE AND RESTORE RELEVANT MACHINE CONTEXT UPON ENTRY AND EXIT OF THE APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE
802
RETURN

FIG. 8

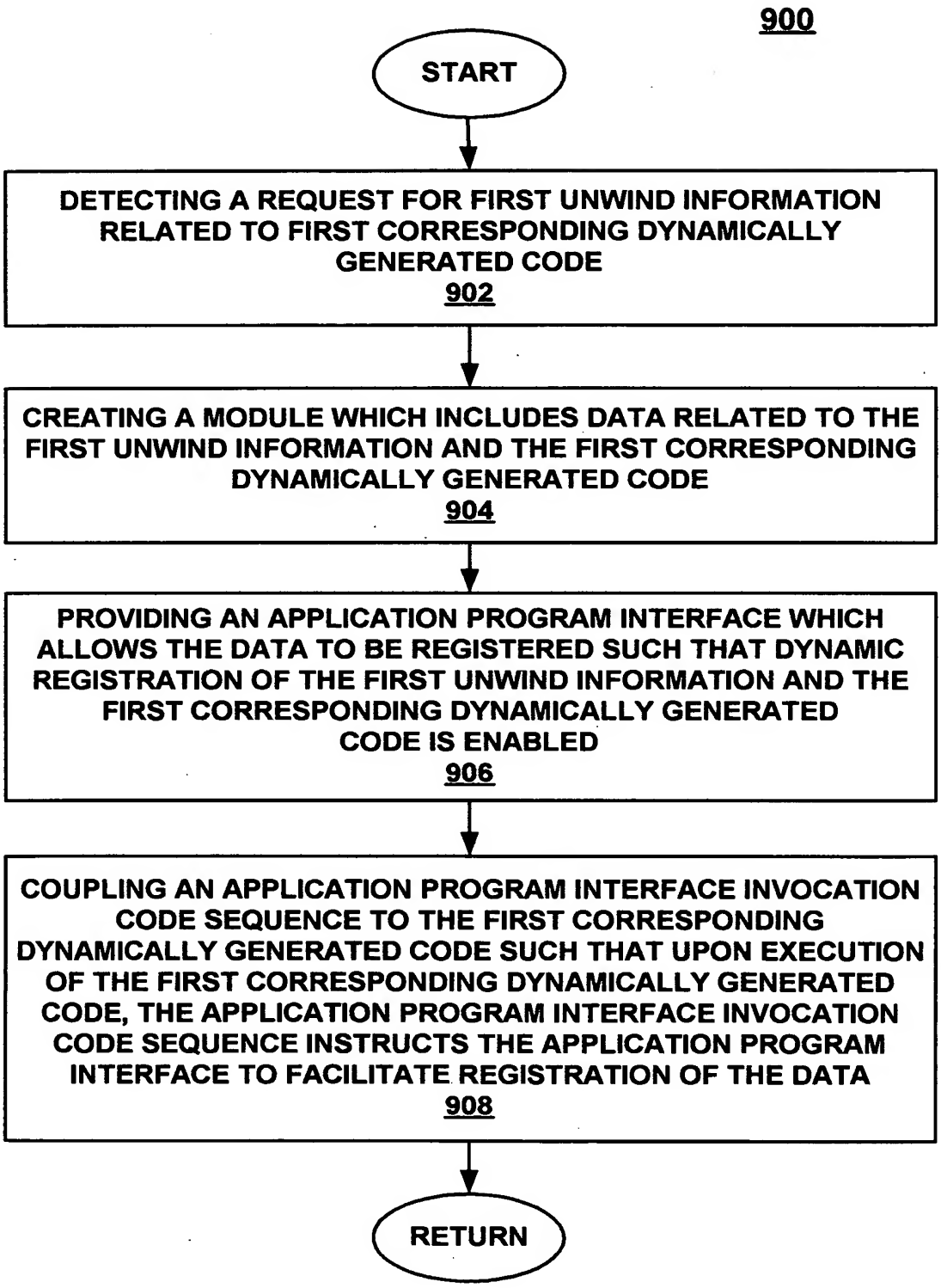
900
START
DETECTING A REQUEST FOR FIRST UNWIND INFORMATION RELATED TO FIRST CORRESPONDING DYNAMICALLY GENERATED CODE
902
CREATING A MODULE WHICH INCLUDES DATA RELATED TO THE FIRST UNWIND INFORMATION AND THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE
904
PROVIDING AN APPLICATION PROGRAM INTERFACE WHICH ALLOWS THE DATA TO BE REGISTERED SUCH THAT DYNAMIC REGISTRATION OF THE FIRST UNWIND INFORMATION AND THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE IS ENABLED
906
COUPLING AN APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE TO THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE SUCH THAT UPON EXECUTION OF THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE, THE APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE INSTRUCTS THE APPLICATION PROGRAM INTERFACE TO FACILITATE REGISTRATION OF THE DATA
908
RETURN

FIG. 9

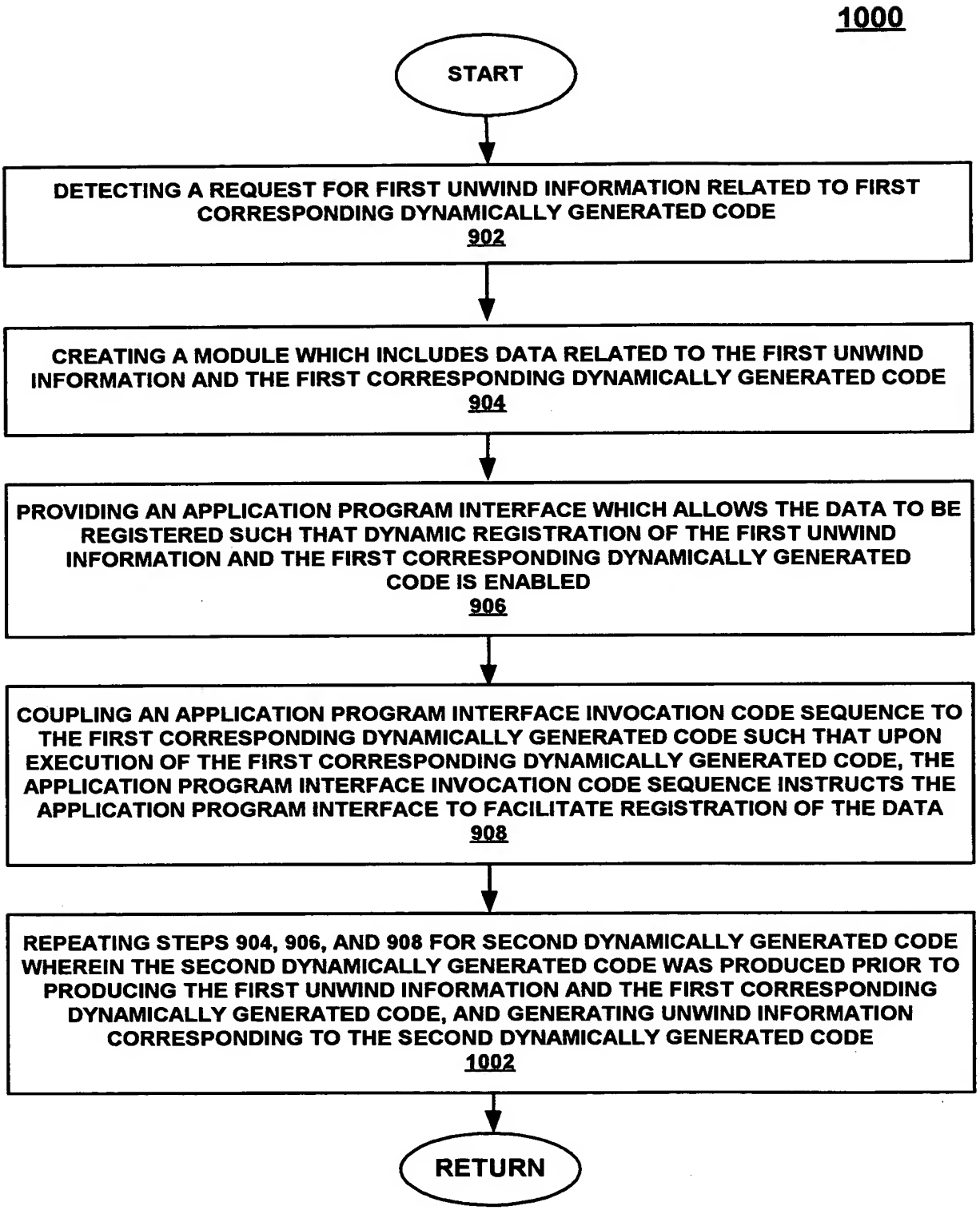
1000
START
DETECTING A REQUEST FOR FIRST UNWIND INFORMATION RELATED TO FIRST CORRESPONDING DYNAMICALLY GENERATED CODE
902
CREATING A MODULE WHICH INCLUDES DATA RELATED TO THE FIRST UNWIND INFORMATION AND THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE
904
PROVIDING AN APPLICATION PROGRAM INTERFACE WHICH ALLOWS THE DATA TO BE REGISTERED SUCH THAT DYNAMIC REGISTRATION OF THE FIRST UNWIND INFORMATION AND THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE IS ENABLED
906
COUPLING AN APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE TO THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE SUCH THAT UPON EXECUTION OF THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE, THE APPLICATION PROGRAM INTERFACE INVOCATION CODE SEQUENCE INSTRUCTS THE APPLICATION PROGRAM INTERFACE TO FACILITATE REGISTRATION OF THE DATA
908
REPEATING STEPS 904, 906, AND 908 FOR SECOND DYNAMICALLY GENERATED CODE WHEREIN THE SECOND DYNAMICALLY GENERATED CODE WAS PRODUCED PRIOR TO PRODUCING THE FIRST UNWIND INFORMATION AND THE FIRST CORRESPONDING DYNAMICALLY GENERATED CODE, AND GENERATING UNWIND INFORMATION CORRESPONDING TO THE SECOND DYNAMICALLY GENERATED CODE
1002
RETURN

FIG. 10

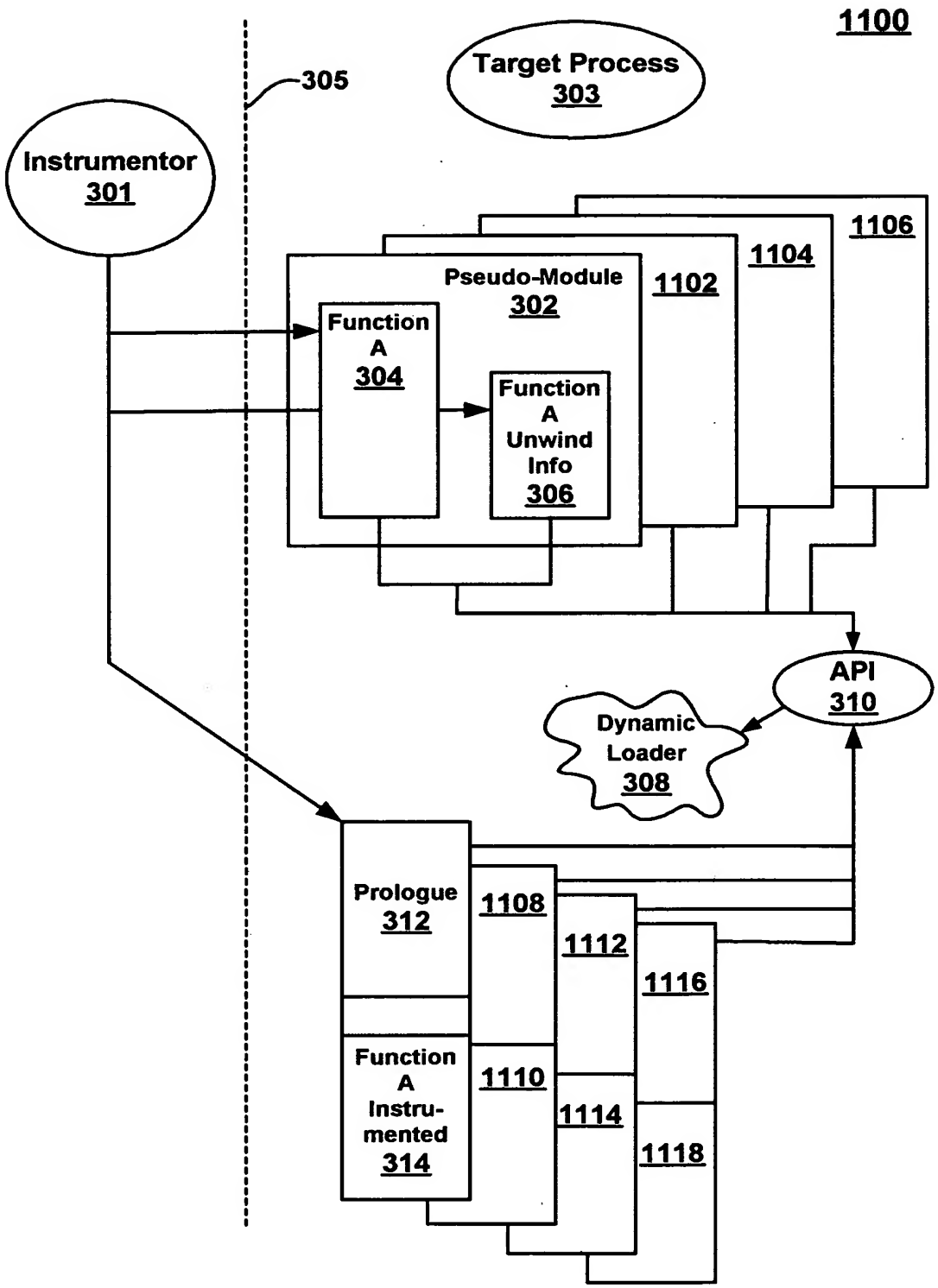
1100
Target Process
303
305
Instrumentor
301
1106
1104
Pseudo-Module
302
1102
Function
A
304
Function
A
Unwind
Info
306
API
310
Dynamic
Loader
308
Prologue
312
1108
1112
1116
Function
A
Instru-
mented
314
1110
1114
1118

FIG. 11